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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,866	04/14/2004	Lawrence J. Stern	07917-212001 / UMMC 03-10	6194

26161 7590 07/22/2008
FISH & RICHARDSON PC
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
JUNG, UNSU	

ART UNIT	PAPER NUMBER
1641	

MAIL DATE	DELIVERY MODE
07/22/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/823,866	STERN ET AL.	
	Examiner	Art Unit	
	Unsu Jung	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,20,25-36,38-50 and 52-57* is/are pending in the application.

4a) Of the above claim(s) *5,10,14,26-36,38-50 and 52* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11-13,20 and 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on April 28, 2007 has been entered. The submission included amendments to specification and claims 1, 3, 4, 26, and 34 and addition of new claims 53-57.

Election/Restrictions

2. Newly submitted claims 53-57 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: claims 53-55 depend from claim 26, which have been previously indicated to belong in the non-elected group of invention (Group II in Restriction Requirement dated November 29, 2006). Therefore, claims 53-55 are patentably distinct from the elected group of invention. Regarding claims 56 and 57, the array of claims 56 and 57 are independent and patentably distinct from the array of claims 1-9, 11-13, 16, 20, and 25. The array of claims 56 and 57 includes an amorphous substrate, which is not required by the array of claims 1-9, 11-13, 16, 20, and 25. The array of claims 1-9, 11-13, 16, 20, and 25

includes a flat substrate, which is not required by the array of claims 56 and 57. Therefore, the arrays of claims 56 and 57 and the array of claims 1-9, 11-13, 16, 20, and 25 have different designs. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art due to their recognized divergent subject matter and searches for one group are not required by the others, restriction for examination purposes as indicated is proper.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 53-57 have been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Status of Claims

3. Claims 1-14, 20, 25-36, 38-50, and 52-57 are pending, claims 10, 14, 26-36, 38-50, and 52-57 have been withdrawn from consideration, and claims 1-9, 11-13, 20, and 25 are currently under consideration for patentability under 37 CFR 1.104.

Objections Withdrawn

4. The objection of specification has been withdrawn in view of the amended specification in the reply filed on April 28, 2008.

Rejections Withdrawn

5. The following rejections have been withdrawn in view of amended independent claim 1, which now recites a flat substrate, in the reply filed on April 28, 2008:

- Rejection of claims 1, 2, 5, 11, 12, 16, 20, and 25 under 35 U.S.C. 103(a) as being unpatentable over Webb et al. (WO 97/46256, Dec. 11, 1997) in view of Rhode et al. (U.S. Patent No. 6,232,445, May 15, 2001) and Lehmann et al. (U.S. Patent No. 5,939,281, Aug. 17, 1999);
- Rejection of claims 3, 4, 6, and 7 under 35 U.S.C. 103(a) as being unpatentable over Webb et al. (WO 97/46256, Dec. 11, 1997) in view of Rhode et al. (U.S. Patent No. 6,232,445, May 15, 2001) and Lehmann et al. (U.S. Patent No. 5,939,281, Aug. 17, 1999) as applied to claim 1 above, and further in view of Taylor (U.S. Patent No. 6,103,479, Aug. 15, 2000);
- Rejection of claims 8 and 9 under 35 U.S.C. 103(a) as being unpatentable over Webb et al. (WO 97/46256, Dec. 11, 1997) in view of Rhode et al. (U.S. Patent No. 6,232,445, May 15, 2001) and Lehmann et al. (U.S. Patent No. 5,939,281, Aug. 17, 1999) as applied to claim 1 above, and further in view of Tom-Moy et al. (U.S. Patent No. 6,235,488, May 22, 2001); and
- Rejection of claim 13 under 35 U.S.C. 103(a) as being unpatentable over Webb et al. (WO 97/46256, Dec. 11, 1997) in view of Rhode et al. (U.S. Patent No. 6,232,445, May 15, 2001) and Lehmann et al. (U.S. Patent No.

5,939,281, Aug. 17, 1999) as applied to claims 1, 11, and 12 above, and further in view of Abraham et al. (*J. Immunol.*, 20014, Vol. 167, pp5193-5201) and Mikesell et al. (U.S. PG Pub. No. US 2002/0095024, Filed on June 6, 2001).

New Grounds of Rejections

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1, 2, 5, 11, 12, 16, 20, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webb et al. (WO 97/46256, Dec. 11, 1997) in view of Rhode et al. (U.S. Patent No. 6,232,445, May 15, 2001), Lehmann et al. (U.S. Patent No. 5,939,281, Aug. 17, 1999), and Wagner et al. (U.S. Patent No. 6,329,209 B1, Dec. 11, 2001).

Webb et al. teaches an array (see entire document) comprising a substrate (support, p49, lines 7-18) and a plurality of MHC molecules complexed with antigen-derived peptides (p18, lines 9-17 and p50, line 1-p51, line 25) immobilized in spatially distinct areas on the substrate (wells of microtiter plates, p80, lines 24-31). Webb et al. further teaches that activation of T-cells is characterized by proliferation of the responsive T cell population coordinated with the selective production of cytokines (p16, lines 28-32). With respect to claim 20, Webb et al. teaches that the different cytokine profiles such as IL-2, IL-4, Il-5, IL-10, and IFN-γ characterize functional phenotypes of type 1 and type 2 T-cells (p16, lines 8-23).

With respect to claims 11 and 12, Webb et al. teaches an array, further comprising costimulatory molecules immobilized in the spatially-distinct areas on the

substrate (p49, lines 7-14), wherein the costimulatory molecules are costimulatory antibodies (p21, line 27-p22, line 6).

With respect to claim 16, Webb et al. teaches an array, wherein the MHC molecules comprise class II MHC molecules (p18, lines 20-30).

However, Webb et al. is silent on disclosing that the each group of spatially distinct areas comprises a plurality of different MHC-peptide complexes and that the array, further comprises anti-factor antibodies specific for secreted factors, immobilized spatially-distinct areas on the substrate. Webb et al. further fails to teach that the substrate is flat.

With respect to claims 1 and 2, Rhode et al. teaches that MHC complexes can be used to screen immune cells such as T-cells expressing a desired target structure in vitro (see entire document, particularly column 4, lines 24-26). A wide variety of peptides can be presented for interaction with T-cells (i.e. a library of different peptides can be linked to a MHC molecule for presentation of T-cells, column 5, lines 11-17). With respect to claim 5, Rhode et al. further teaches that an array of MHC complexes can be formed on a substrate such as 96-well plates (column 55, lines 45-51) and MHC molecules are selected from Class I MHC molecules, Class II MHC molecules, or Class I and Class II MHC molecules (column 3, lines 36-45).

With respect to claims 1 and 25, Lehmann et al. teaches a method of detecting secreted cytokines by activated T-cells using cytokine capture assay (see entire document, particularly, column 3, lines 14-36). The cytokine capture assay of Lehmann

et al. involves plating both the activating molecules (test antigen peptide) co-incubated with immobilized cytokine capture antibodies (column 3, lines 14-36).

With respect to claim 1, Wagner et al. teaches miniaturized protein array chips, which allow ability to assay in parallel a multitude of proteins (see entire document, particularly, column 2, lines 51-55). Wagner et al. further teaches that the substrate of the array may be either organic or inorganic, biological or non-biological, or any combination of these materials (column 13, lines 48-58). In one embodiment, the substrate is transparent or translucent (column 13, lines 48-58). The portion of the surface of the substrate on which the patches reside is preferably flat and firm or semi-firm (column 13, lines 48-58). However, the array of the present invention need not necessarily be flat or entirely two-dimensional (column 13, lines 48-58). Significant topological features may be present on the surface of the substrate surrounding the patches, between the patches or beneath the patches (column 13, lines 48-58). For instance, walls or other barriers may separate the patches of the array (column 13, lines 48-58).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ plurality of different MHC-peptide complexes of Rhode et al., which are formed by a MHC molecule complexed with a library of different peptides, in the array of Webb et al. in order to screen T cells expressing a desired target structure in vitro. The advantage of screening T cells for their interaction with a plurality of different peptides complexed to a MHC molecule provides the motivation to combine teachings of Webb et al. and Rhode et al. with a reasonable expectation of success. In

addition, it would have been obvious to one of ordinary skill in the art at the time of the invention to include anti-factor antibodies specific for secreted factors co-immobilized on the spatially-distinct areas of the substrate with activating molecules as taught by Lehmann et al. in the array of Webb et al. in order to perform cytokine capture assay for detecting secreted cytokines by the activated T-cells. The advantage of allowing T-cell activation and capturing of the secreted cytokines following the activation in the same area of the substrate provides the motivation to combine teachings of Webb et al. and Lehmann et al. with a reasonable expectation of success as the use of co-immobilized MHC molecules complexed with antigen-derived peptides and anti-factor antibodies specific for secreted factors would eliminate additional steps of supernatant harvesting and transferring of the supernatant to another substrate for cytokine detection assay necessary to determine cytokine profile of the activated T-cell populations. Further, because Wagner et al. teaches that substrate of an array having both flat and non-flat features (such as wells) can be used to provide support for the protein arrays, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the multi-well plate format of Webb et al. in view of Rhode et al. and Lehmann et al. for the flat substrate format of Wagner et al. to achieve to predictable result of providing a suitable support for the protein array.

With respect to claim 1 and all dependent claims thereof , the recitation that spatially-distinct areas are configured to allow contact with one sample at essentially the same time and with the same sample is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re*

Hutchison, 69 USPQ 138 (CCPA 1946); *In re Swinehart*, 169 USPQ 226 (CCPA 1971); and In re Schreiber, 44 USPQ2d 1429 (Fed. Cir. 1997). A patent applicant is free to recite features of an apparatus either structurally or functionally. See *In re Swinehart*, 439 F.2d 210, 212, 169 USPQ 226, 228 (CCPA 1971) (" [T]here is nothing intrinsically wrong with [defining something by what it does rather than what it is] in drafting patent claims."). Yet, choosing to define an element functionally, i.e., by what it does, carries with it a risk. As our predecessor court stated in *In re Swinehart*, 439 F.2d at 213, 169 USPQ at 228:

> where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on

Therefore, the feature of "the spatially-distinct areas are configured to allow contact with one sample at essentially the same time and with the same sample" would be an inherent characteristic of the array of Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al. since the array of Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al. meets all the structural limitations of the claimed array.

10. Claims 3, 4, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webb et al. (WO 97/46256, Dec. 11, 1997) in view of Rhode et al. (U.S. Patent No. 6,232,445, May 15, 2001), Lehmann et al. (U.S. Patent No. 5,939,281, Aug. 17, 1999), and Wagner et al. (U.S. Patent No. 6,329,209 B1, Dec. 11, 2001) as applied to claim 1 above, and further in view of Taylor (U.S. Patent No. 6,103,479, Aug. 15, 2000).

Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al. teaches an array comprising a substrate and an array of MHC molecules complexed with antigen-derived peptides and costimulatory antibodies immobilized in spatially distinct areas on the substrate as set forth in item 12 above. However, Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al. fails to teach an array, wherein the spatially distinct areas are all surrounded by a single hydrophobic barrier.

With respect to claims 3-7, Taylor teaches arrays for simultaneous analysis of multiple types of cell interactions (see entire document, particularly, column 6, lines 40-47). The arrays of Taylor encompass arrays that comprise identical cell types that can be treated with a combinatorial of distinct compounds (different specific cell binding molecules) or a combinatorial cell types that can be treated with one or more compounds (the same specific cell binding molecules, column 6, lines 48-55). The micro-patterned chemical array comprises a base (substrate), which is treated to produce a hydrophobic surface across which are dispersed at regular intervals of hydrophilic spots or wells (spatially-distinct areas on the substrate, column 8, lines 34-37). The cells are bound only in the wells, because the specific chemical environment in the wells, in conjunction with the hydrophobic environment surrounding each of the wells, permits the selective binding of the cells to the wells only (column 11, lines 64-67). Modification of wells with specific cell binding molecules (immobilized specific cell binding molecules) permits selective binding of cells to specific wells (column 12, lines 1-3).

With respect to claims 6 and 7, Taylor teaches that the substrate comprises glass, which is optically transparent, or silicon (column 8, lines 34-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ the substrate (glass or silicon) of Taylor, which includes all the spatially-distinct areas surrounded by a single hydrophobic barrier and having either one type of compounds (the same MHC molecules) or a combinatorial of distinct compounds (different MHC molecules) in the array of Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al. in order to conduct simultaneous analysis of multiple types of cell interactions. The advantage of using substrate, which allows selective binding of the cells of interest to the spatially-distinct areas only and simultaneous analysis of multiple types of cell interactions provides the motivation to employ the substrate of Taylor in the array of Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al. with a reasonable expectation of success as the substrate of Taylor can be used for a variety of cell interactions including lymphocytes such as T-cells.

With respect to claims 3 and 4, the recitation that spatially-distinct areas are configured to allow contact with one sample at essentially the same time and with the same sample is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138 (CCPA 1946); *In re Swinehart*, 169 USPQ 226 (CCPA 1971); and In re Schreiber, 44 USPQ2d 1429 (Fed. Cir. 1997). A patent applicant is free to recite features of an apparatus either structurally or functionally. See *In re Swinehart*, 439 F.2d 210, 212,

169 USPQ 226, 228 (CCPA 1971) (" [T]here is nothing intrinsically wrong with [defining something by what it does rather than what it is] in drafting patent claims."). Yet, choosing to define an element functionally, i.e., by what it does, carries with it a risk. As our predecessor court stated in *In re Swinehart*, 439 F.2d at 213, 169 USPQ at 228:

> where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on

Therefore, the feature of "the spatially-distinct areas are configured to allow contact with one sample at essentially the same time and with the same sample" would be an inherent characteristic of the array of Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al., and further in view of Taylor since the array of Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al., and further in view of Taylor meets all the structusral limitations of the claimed array.

11. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webb et al. (WO 97/46256, Dec. 11, 1997) in view of Rhode et al. (U.S. Patent No. 6,232,445, May 15, 2001), Lehmann et al. (U.S. Patent No. 5,939,281, Aug. 17, 1999), and Wagner et al. (U.S. Patent No. 6,329,209 B1, Dec. 11, 2001) as applied to claim 1 above, and further in view of Tom-Moy et al. (U.S. Patent No. 6,235,488, May 22, 2001).

Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al. teaches an array comprising a substrate and an array of MHC molecules complexed with antigen-

derived peptides and costimulatory antibodies immobilized in spatially distinct areas on the substrate as set forth in item 12 above. Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al. further teaches that biotinylated MHC molecules can be immobilized on the avidin-coated substrate via biotin-avidin linked interactions with the substrate (p81, lines 10-16). However, Webb et al. fails to teach that streptavidin can be used in place of avidin.

With respect to claims 8 and 9, Tom-Moy et al. teaches that streptavidin can be a substitute for avidin since it has similar biotin-binding properties (see entire document, particularly column 4, lines 62-63).

Therefore, Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al. meets the limitations of claims 8 and 9 except that it employs avidin rather than streptavidin to coat the substrate surface for immobilization of biotinylated MHC molecules. However, because these two elements were art-recognized equivalents at the time of the invention in the specific binding applications, where it is immaterial whether the avidin or streptavidin is used to bind to a biotin, one of ordinary skill in the art at the time of the invention would have found it obvious to substitute streptavidin for the avidin of Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al.

12. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Webb et al. (WO 97/46256, Dec. 11, 1997) in view of Rhode et al. (U.S. Patent No. 6,232,445, May 15, 2001), Lehmann et al. (U.S. Patent No. 5,939,281, Aug. 17, 1999), and Wagner et al. (U.S. Patent No. 6,329,209 B1, Dec. 11, 2001) as applied to claims 1, 11, and 12

above, and further in view of Abraham et al. (*J. Immunol.*, 20014, Vol. 167, pp5193-5201) and Mikesell et al. (U.S. PG Pub. No. US 2002/0095024, Filed on June 6, 2001).

Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al. teaches an array comprising a substrate and an array of MHC molecules complexed with antigen-derived peptides and costimulatory antibodies immobilized in spatially distinct areas on the substrate as set forth in item 12 above. Webb et al. further teaches the costimulatory molecules include ICAM's (ICAM-1, ICAM-2, and ICAM-3, p72, line 14-p74, line 20). Activation of T cells is characterized by proliferation of the responsive T cell population coordinated with the selection of cytokines (p16, lines 28-32). However, Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al. fails to teach an array, wherein the costimulatory antibodies bind specifically to CD11a.

Abraham et al. teaches that integrin LFA-1 serves as an accessory molecule in T cell activation (see entire document). The primary pathway whereby engagement of LFA-1 through its ligand ICAM-1 up-regulates IL-2 gene expression through enhanced IL-2 transcription (Abstract). Further, a number of anti-LFA-1 Abs has agonist/costimulatory activity such as anti-CD11a mAb (p5197, right column).

Mikesell et al. teaches that a first signal mediated by foreign antigens presented by MHC complexes causes T-cell entry into the cell cycle and a second signal, termed costimulation, causes cytokine production and T-cell proliferation (p1, paragraph [0003]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include anti-CD11a antibody of Abraham et al. as a

costimulatory antibodies in the array of Webb et al. in view of Rhode et al., Lehmann et al. , and Wagner et al. in order to provide costimulatory signal in addition to the antigenic signal of the MHC molecules complexed with antigen-derived peptides necessary for production of cytokines and T-cell proliferation, which can be used to detect T-cell activation/responsiveness. The advantage of delivering necessary costimulatory signal for T-cell characterization provides the motivation to combine teachings of Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al. and Abraham et al. with a reasonable expectation of success as Mikesell et al. teaches that a first signal mediated by foreign antigens presented by MHC complexes causes T-cell entry into the cell cycle and a second signal, termed costimulation, causes cytokine production and T-cell proliferation. Further, Webb et al. et al. in view of Rhode et al., Lehmann et al., and Wagner et al. meets the limitations of claim 13 except that it employs an ICAM's rather than anti-CD11a antibodies as costimulatory molecules. However, because these two elements were art-recognized equivalents at the time of the invention in the T-cell immunology arts, where it is immaterial whether the ICAM's or anti-CD11a antibodies are used to provide costimulatory signal to T-cells, one of ordinary skill in the art at the time of the invention would have found it obvious to substitute anti-CD11a antibodies for the ICAM's of Webb et al. in view of Rhode et al., Lehmann et al., and Wagner et al.

Response to Arguments

13. Applicant's arguments with respect to claims 1-14, 16, 20, and 25 have been considered but are moot in view of the new ground(s) of rejection.

Since the prior art fulfills all the limitations currently recited in the claims, the invention as currently recited would read upon the prior art.

Conclusion

14. No claim is allowed.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Unsu Jung whose telephone number is (571)272-8506. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Unsu Jung/
Unsu Jung, Ph.D.
Patent Examiner
Art Unit 1641